

EPSRC Affective Communication Network

Leeds University, Sheffield Hallam University, Sheffield University, York University

This note was produced for a group of researchers from a wide range of disciplines including historians, curators, information scientists, linguists, engineers, designers, film-makers and social anthropologists. At the time we were working on developing a shared understanding of research questions relating to affect and communication in the context of the Royal Armouries Museum in Leeds but with wider implication for design in many environments.

Briefing Note – On Designing

Chris Rust 4/03/06

While our network is concerned with a wide spectrum of approaches to affective communication, the EPSRC/AHRC Design21 initiative that we are bidding to is focused on Designing.

As we are a very broad church, with different kinds of designers and people who are not designers at all, I thought it would be a good idea to share some ideas about designing to start to develop a shared understanding. Others may have other points of view to express. I have covered three issues – 1. How we describe designing. 2. Rittel's Wicked Problem theory which describes design problems and 3. Gedenryd's theory of how designers work.

1. Design or Designing?

The habit of calling a finished product a Design is convenient but wrong. Design is what you do, not what you've done.

Bruce Archer

Bruce Archer died recently so it's good to have his voice here. Terry Love (engineer and design theorist based at Curtin Univ in Australia) has suggested that using "Design" as a noun is a dangerous practice which has undermined the ability of academics to develop design theory. He proposed (Love 2003) that using verbs, "Designing" or "To Design", was a good strategy to avoid some of the confusion that has characterised recent debates in, for example, the very dynamic PhD-Design JISCMail list.

One of the reasons why I am particularly interested in our project doing some of its own designing as well as attending to the work of those involved in designing the exhibition is that the work of the designer (author), their intentions and ability to shape the meaning of their work is a crucial focus for research which is intended to inform the kind of corporate venture represented by the 100 Years War Exhibition or any other form of cultural or industrial production.

2. Wicked Problems

one cannot first understand, then solve

Horst Rittel

You don't understand the problem until you have developed a solution

Jeff Conklin

The idea of wicked and tame problems was first proposed by Horst Rittel (eg Rittel & Webber 1973) as an attempt to provide a new way of thinking about designing, partly a reaction to the modernist excesses of the Design Methods movement of the 1960s and 70s and to what some see as mechanistic ideas about design in Herbert Simon's

The Sciences of the Artificial. That wider problem is discussed further in the third part of this short paper.

Rittel characterised wicked problems thus:

a class of social problems which are ill-formulated, where the information is confusing, where there are many clients and decisions makers with conflicting values and where the ramifications in the whole system are thoroughly confusing (Buchanan 1992)

(Richard Buchanan's 1992 paper gives a detailed account of Rittel's ideas in a wider discussion of designing as a liberal art)

The implication of the wicked problem is that you cannot predict its solution, or define a method for solving it, or even set "stopping rules" that tell you when you have solved it. There are many possible approaches and solutions and no reason to believe that one will be necessarily "better" than another.

The flip side of the wicked problem is the "Tame" problem which can be addressed by a predetermined method such as a mathematical calculation or application of geometric rules. There is no reason to believe that wicked problems may not one day be tamed and many have been (what were once seen as difficult 3-D "styling" problems in industrial design have become routine work in many cases, although there is always the possibility that "wickedness" can be introduced by a more enquiring designer)

One of my personal theories is that engineers are predisposed to taming problems while so-called "creative" designers (of course engineers are creative and it takes creativity to tame a difficult problem) tend to prefer those problems that cannot yet be tamed. One might even consider that engineering is the art of taming previously wicked problems and designing is the art of responding to problems that cannot (for now) be tamed. This is only a personal theory.

3. Analyse, Plan, Execute?

Having said this much about design methods, there is but one thing to add: They don't work, and they don't work at all.

Henrik Gedenryd (1998, 59)

Henrik Gedenryd set out to question classical and folk theories about how we think by investigating how theories of designing matched up to designers' practices. He pointed out that philosophers have tended to privilege the idea of "pure thought" (well they would wouldn't they?) and theorists have persisted in seeking evidence that pure thought unconnected to action is in some way more effective than thinking in action, even though experimental evidence indicates that most thinking takes place in or supported by action and our capacity to consciously manage complex data in our brains unaided is actually quite low.

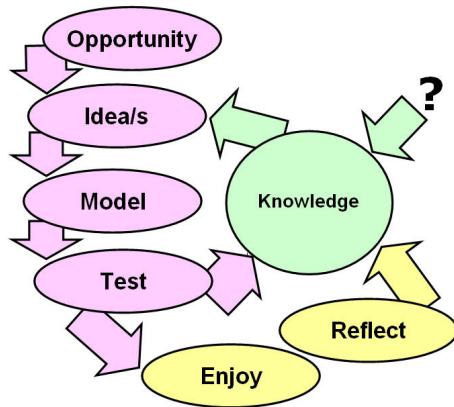
Gedenryd set out a "Rosetta Stone" of all the theories of thinking or designing that he could discover and concluded that all seemed to assume some kind of linear process along the general lines of "analyse, plan, execute". Although models of designing have matured to acknowledged the need for repetition or iteration Gedenryd points out that these are still the old linear models with their tails in their mouths.

He chose designing for his study since, unlike some other areas of thought where there is an existing environment of things and actions that can intrude on our ability to think in an uncluttered way, designers start out with nothing. The object of thought – some future artefact that might be produced – does not exist so there is nothing to prevent them exercising the supposedly superior art of pure thought. As he points

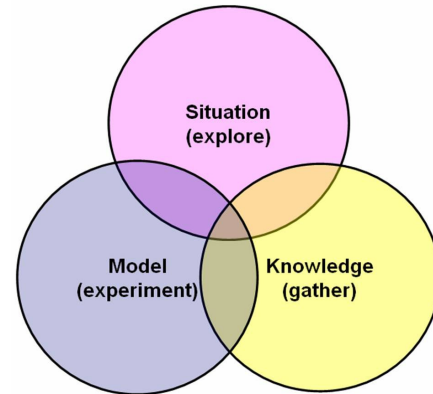
out, such expectations are confounded by designers' actual practice which is generally to move into making stuff at the earliest possible opportunity¹

So Gedenryd proposed an alternative theory of designing, and thinking, which stated that it took place in the conjunction of three elements: A person (eg the designer), and environment (eg the drawing, model, written description etc that the designer is producing) and a task (drawing, modelling, writing, performing etc).

Here are two diagrammatic models of designing that I have produced in the past:



Model A – Iterative Design Process
(classical model – OK for Organisations?)



Model B – Immersive Design Process
(after Gedenryd – better for individuals?)

I produced **Model A** after examining a number of design groups working in industrial product development. It matches quite well the organisational process that they need (and tend to develop) when running projects to a timetable and it includes most of the things that designers do. It assumes that you go round the *Have Ideas>Model Ideas>Test>Add Knowledge>Improve ideas* several times until you have a product good enough to launch. It also asks the question of where you might look to add to your existing knowledge and points out that all “products” are provisional solutions – you have the opportunity to go back into the loop and start again.

However, when I tried to put this model into practice in a big research project with the designer Graham Whiteley, Graham more than once stated that it didn't describe how he, as an individual designer, actually worked. His work was much more fluid and continuous rather than iterative. As I was his supervisor he was polite enough not to say I was completely wrong and it was not a central aspect of the work (to develop an analogous artificial limb) so it didn't do any harm.

However when I discovered Gedenryd's work I realised that for an individual designer, or perhaps even a small design group, a different model was needed, which led me to **Model B**. It is not a direct copy of Gedenryd's *Designer/Environment/Action* model, instead it describes how that might manifest itself in a description of what designers do in their work. It certainly matches Graham Whiteley's practice observed in the project where he moved freely between the three areas of the diagram.

Gedenryd, H. (1998) “How Designers Work – making sense of authentic cognitive activities” PhD thesis, Lund University, Sweden
(<http://www.lucs.lu.se/People/Henrik.Gedenryd/HowDesignersWork/index.html>, accessed 30 Dec 2003)

¹ Bruce Archer, the arch-modernist, was an honourable exception – he once spent a year planning a project but the funding agency lost interest at that point since they had rather hoped to see some design ideas. However Archer's planning was itself a creative modelling act (of process not product) so maybe he does fit the model after all.

Love, T. (2003) "Some thoughts about the ways design researchers discuss and analyse that have consistently resulted in theory problems" message to PhD-Design discussion list, 2 Mar 2003 15:57, archived at <http://www.jiscmail.ac.uk/lists/PhD-Design.html>

Rittel, H. and Webber, M. (1973) "Dilemmas in a General Theory of Planning," Policy Sciences 4, Elsevier Scientific Publishing, Amsterdam, pp. 155-159

Simon, H. (1968) "The Sciences of the Artificial", Cambridge, MIT Press